Workshop on Draft Staff White Paper, "Resource, Reliability and Environmental Concerns of Aging Power Plant Operations and Retirements" (2004 Aging Power Plant Study)

California Energy Commission
August 26, 2004

Energy Report Schedule

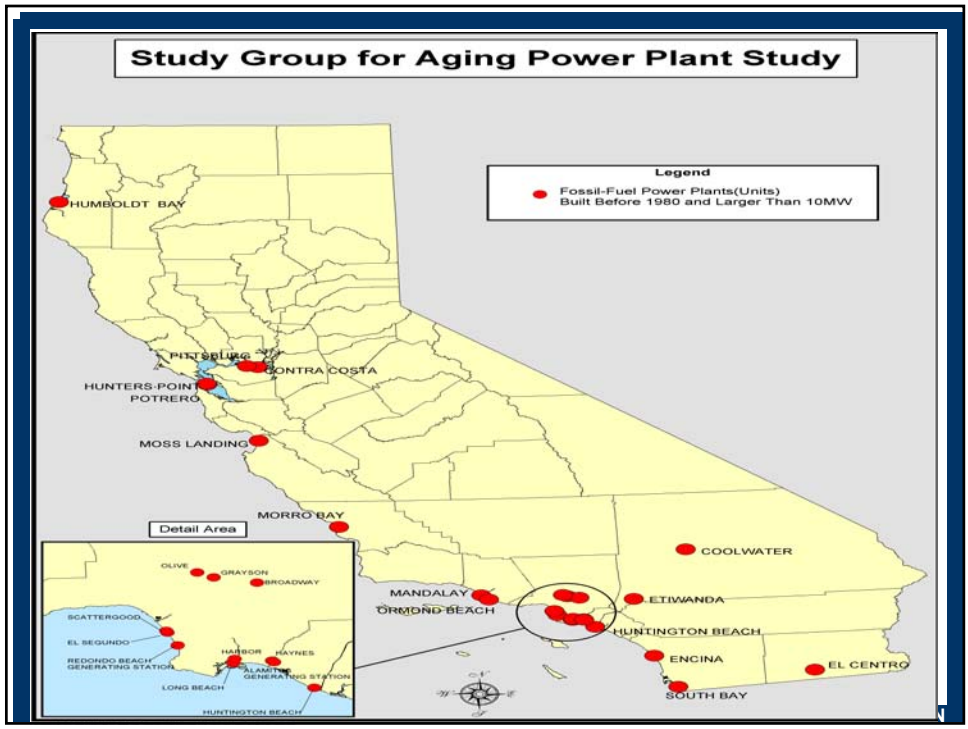
Draft summary document released	*September 15*
Hearings around the state	*September 29 San Francisco*
	September 30 Sacramento
	October 1 San Diego
	October 5 Los Angeles
	October 8 Fresno
Release of Committee Document	*October 20*
Consider adoption by the full Commission	*November 3*
Transmit final document to the Governor	*November*

Participation

- Listen in on the webserver
- Call in at (800) 857-9600 (passcode: 21142)
- Complete blue cards to speak at the workshop
- E-mail comments to: IEPRHearing@energy.state.ca.us
- Provide written comments following workshop
- Subscribe to the Energy Report's e-mail list-server: www.energy.ca.gov

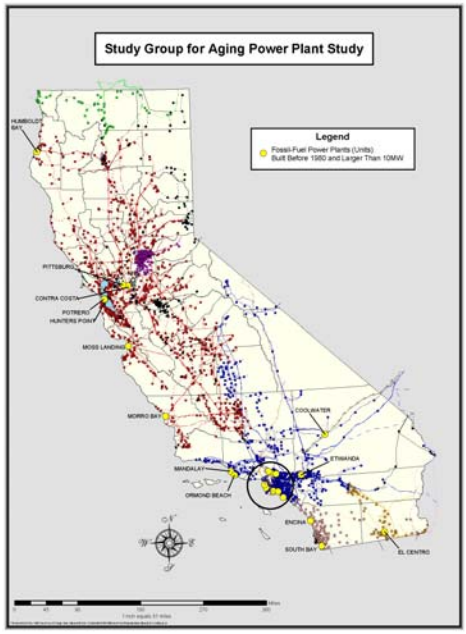
Workshop Purpose

- Take comment on Draft Staff White Paper
  - Are Staff's conclusions appropriate and factually accurate?
  - Does the paper accurately capture parties' input to this study?
  - Are there other factors to consider?
- White paper and comments will be considered in Committee Report, due mid-September



Local and Regional Reliability

- Definitions:
  - Local Reliability: areas where failure of two major components causes outages
    - Includes CA ISO's Nine Local Reliability Areas (LRAs)
    - Also includes areas that could become LRAs in future following retirements
  - Regional Reliability: refers to ability to provide cost-effective service in any one of three large load center regions



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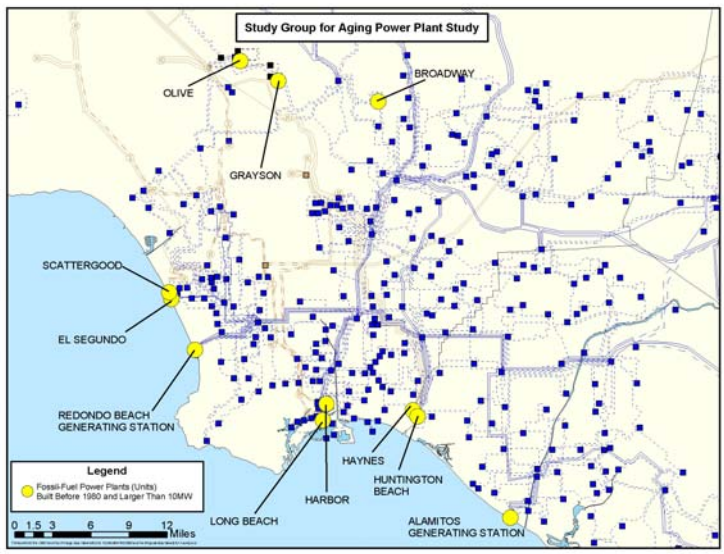

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Report Summary

- Role of Aging Plants
  - They provide local reliability service in select areas through the CA ISO's RMR process.
  - They provide regional reliability by acting as a margin of generating reserve for use during supply emergencies.
  - Those owned by municipal utilities provide cost-effective baseload and other services, usually near their load centers.
  - They provide incremental generation to meet demand at peak times, especially on hot summer days (regional generation reserve).
  - They are used to alleviate transmission system congestion by offsetting intertie overloading with generation at or near the load.

Reliability Analysis

- Ranked Retirement Risks
  - Based on whether units hold contracts (RMR, DWR, bilateral) through all or part of study period
  - No Contracts: high risk
  - Have contracts but may lose them during the study period: medium risk
  - Have contracts through entire study period: low risk
- Rankings only relative to study group, and are affected by other factors

Reliability Analysis (cont'd)

- Conducted analyses of effects of aging plant retirements on transmission system
- Examined role of aging plants in alleviating transmission circuit congestion (SCIT, etc.)
- Studied projects that could affect RMR status
- Coordinated with CA ISO on its study of reliability effects of retirements

ISO/PTO Annual Grid Assessments

- SCE, SDG&E, PG&E now studying transmission impacts of plant retirements in their annual Grid Assessment Studies
- The assessments identify reliability criteria violations and the steps needed to avoid violations, including transmission upgrades.
- Reliability criteria are specific about both what constitutes a violation and how to test for violations.

Aging Power Plants

- New to the Grid Assessments this year is a study of potential power plant retirements' effects on the ability to meet reliability criteria.
- The specific scenarios for this year's assessments focus on aging plant retirements.
- The CA ISO's assumptions for grid planning studies can be found at: http://www1.caiso.com/docs/2001/06/25/20010625134406100.pdf

Reliability of Aging Units

- Forced Outage Rate (FOR) data outdated
- FOR data submission not mandatory
- CEMS data available for 62 units shows no correlation between age and FOR
- FOR greatly affected by maintenance spending
- Analysis of CEMS data shows high availability of aging units in summer months
- Data suggests that aging plant life can be extended almost indefinitely, with proper maintenance program

Future of Aging Plant Operation

- IOUs likely to need additional 5,000 MW of capacity by summer 2005, and another 5,000 MW by 2009
- Products needed will be peaking and load-following, not base load
- Near-term energy needs limited to peak hours of summer until 2007, when energy will be needed in other seasons
- Aging plant participation largely dependent on future market design (RA, etc.)

Alternatives to Aging Plants

- Possible replacements for retired aging plants include:
  - demand-side management (efficiency and conservation) and demand response (such as incentive programs to reduce peak demand)
  - new renewable energy project development
  - increased generation at existing power plants
  - new power plants
  - transmission projects or upgrades

Alternatives (cont'd)

- Exact mix likely to be different for different plants
- Most likely during the study period initially would be increased generation from existing plants, followed by newly constructed plants
- Overall replacement mix could either increase or decrease fuel use and environmental impacts, depending on technology employed

Aging Plant Air Emissions

- Most aging units are already well controlled, and have emissions rates per therm identical to new plants
- When operated in load-following mode, aging units are 10-15% less efficient than new plants, so emission rates per megawatt-hour are 10-15% higher than new plants
- In 2003, aging plants produced 28% of electricity in state, but only 14% of generating sector NOx emissions

Once-Through Cooled Facilities

- 80% of the aging units under study are once-through cooled.
- New Clean Water Act regulations on once-through cooling not expected to affect aging plant operations during the study period
- Future effect of regulations unknown, but could have great effect on aging plant operations
- Very large information gap concerning cumulative impacts

What's Next?

- Continue collecting data and conducting additional analysis, especially on regional supply/demand balance and congestion relief
- Committee to produce Draft 2004 Energy Report Update in mid-September
- Hearings in late September and early October
- Final Report in late October